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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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NGUYEN, LUONG TRUNG

ART UNIT	PAPER NUMBER
2612	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/136,680	Applicant(s) Chevallier
	Examiner Luong Nguyen	Art Unit 2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-28 is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-28 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on Aug 19, 1998 is/are a) ☐ accepted or b) ☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 3
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Drawings

1. The drawings are objected to because of the informalities addressed below:

In figure 1, element "memory comp/decomp 32" should be changed to --comp/decomp 32--.

In figure 1, there is no connection between comp/decomp 32 and memory 34. It should include an arrow to indicate the compressed image data is fed to memory 34 as disclosed in the specification, page 6, line 20.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities:

In the specification, page 10 (lines 16, 28, 29), page 11 (lines 2, 5-6, 8), all disclose "substrate 110." However, there is no disclosure of substrate 110 in figures 1-3.

Appropriate correction is required.

Claim Objections

3. Claims 1-28 are objected to because of the following informalities:

Claim 1 (line 7), claim 6 (line 1), claim 7 (line 1), claim 19 (line 11), claim 25 (line 1), claim 26 (line 1),"CMOS imager" should be changed to --CMOS image sensor--.

Claim 8 (line 5), claim 11(line 1), claim 15 (line 6), claim 16 (line 1), "the non-volatile memory" should be changed to --the non-volatile memory unit--.

Claim 27 (line 4), "the non-volatile memory cells" should be changed to --the array of non-volatile memory cells--.

Claim 21 (line 2), claim 22 (line 2), "CMOS imager sensor" should be changed to --CMOS image sensor--.

Claims 2-7 are objected as being dependent on claim 1.

Claims 9-14 are objected as being dependent on claim 8.

Claims 16-18 are objected as being dependent on claim 15.

Claims 20-26 are objected as being dependent on claim 19.

Claim 28 is objected as being dependent on claim 27.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4.The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 recites the limitation "the" in "the single integrated circuit". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 4-6, 8-25, 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt (US 6,278,481) in view of Zhou et al. (US 5,909,026).

Regarding claims 1, 8, 13, Schmidt discloses a digital camera comprising a CMOS image sensor (CMOS imager 505, figure 5, column 10, lines 26-39); an array of non-volatile memory cells (RAM memory 515 which is equivalent to memory 325 in figure 3).

Schmidt fails to specifically disclose a level of protective material fabricated over the array of non-volatile memory cells for blocking the light received by the CMOS imager. However, Zhou et al. disclose an integrated sensor with frame memory in which a metal is used for light

shield in the frame memory array (column 7, lines 14-18). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Schmidt by the teaching of Zhou et al. in order to prevent incident light from contacting to the charge stored in the memory. This increase image quality.

Regarding claims 4, 9, 22, Zhou et al. disclose wherein the level of protective material is fabricated as part of the CMOS imager (column 7, lines 4-19).

Regarding claims 5, 14, 17, 24, Schmidt and Zhou et al. fail to specifically disclose wherein the level of protective material is a layer of metal fabricated as an interconnect for electrically connecting the CMOS imager and other circuits on the substrate. However, Zhou et al. disclose protective material is a layer of metal (column 7, lines 14-19). It would have been obvious to use this metal layer as a conductor for connecting the CMOS imager and other circuits on the substrate in order to reduce cost and size of the camera.

Regarding claim 6, 25, Schmidt fails to specifically disclose wherein the CMOS imager comprises an active pixel array. However, Zhou et al. disclose an active pixel array APS 110 (figure 1A, column 3, lines 24-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Schmidt by the teaching of Zhou et al. in order to allow non-destructive readout and random access (column 1, lines 43-44).

Regarding claim 10, Schmidt discloses a micro-controller for controlling transfer image from CMOS imager to non-volatile memory unit (microcontroller 510, figure 5, column 10, lines 40-48).

Regarding claim 11, 23, Schmidt and Zhou et al. fail to specifically disclose the non-volatile stores program code information for controlling the microcontroller. However, Schmidt discloses RAM memory 515, figure 5 (non-volatile memory) and EEPROM program memory 520 to store instructions (figure 5, column 10, lines 40-48). It would have been obvious to include EEPROM program memory 520 in RAM memory 515 to make a single memory. This reduce the size of the device.

Regarding claims 12, 18, Schmidt discloses a digital signal processor (microcontroller 510, figure 5, column 10, lines 40-48).

Regarding claims 15-16, all the limitations are contained in claim 8 and 10. Therefore, see Examiner's comments regarding claims 8 and 10.

As for claims 27-28, all the limitations are contained in claim 1 and 5. Therefore, see Exminer's comments regarding claims 1 and 5.

Regarding claim 19, Schmidt discloses a digital camera comprising a CMOS image sensor (CMOS imager 505, figure 5, column 10, lines 26-39); an analog to digital converter (A/D conversion of the image is performed on the CMOS imaging chip 505, figure 5, column 10, lines 45-48); a frame memory (buffer SRAM 435, figure 4, column 9, lines 48-52); a data compression/decompression unit (JPEG circuit 445, figure 4, column 9, line 59 - column 10, line 5); a non-volatile memory unit (RAM memory 515 in figure 5, which is equivalent to memory 325 in figure 3); a microcontroller (microcontroller 510, figure 5, column 10, lines 40-48).

Schmidt fails to specifically disclose a layer of protective material fabricated over the

non-volatile memory unit for blocking the light received by the CMOS imager. However, Zhou et al. disclose an integrated sensor with frame memory in which a metal is used for light shield in the frame memory array (column 7, lines 14-18). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Schmidt by the teaching of Zhou et al. in order to prevent incident light from contacting to the charge stored in the memory. This increase image quality.

Regarding claim 20, Schmidt discloses a digital signal processor (microcontroller 510, figure 5, column 10, lines 40-48); a digital to analog converter (digital to analog converter 530, figurre 5, column 10, lines 40-48); an electronic view finder (monitor, column 11, line 11).

Regarding claim 21, Schmidt discloses the non-volatile memory unit (memory 515, figure 5) is fabricated adjacent to the CMOS image sensor (CMOS imager 505, figure 5).

8. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt (US 6,278,481) in view of Zhou et al. (US 5,909,026) further in view of Komori et al. (US 6,255,690).

Regarding claim 2, Schmidt and Zhou et al. fail to specifically disclose wherein each memory cell is a field effect transistor with a floating gate. However, Komori et al. disclose a semiconductor integrated circuit device having a non-volatile memory circuit which is a field effect transistor with a floating gate (column 3, lines 15-21). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device

in Schmidt and Zhou et al. by the teaching of Komori et al. in order to reduce the cell area and to attain a high integration density (column 1, lines 55-58).

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt (US 6,278,481) in view of Zhou et al. (US 5,909,026) further in view of Ross (US 5,241,412).

Regarding claim 3, Schmidt and Zhou et al. fail to specifically disclose wherein the protective material is polyamide. However, Ross discloses opaque material (protective material) is polyamide (figure 4, column 5, lines 45-46). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Schmidt and Zhou et al. by the teaching of Ross in order to prevent incident light from contacting to the charge stored in the memory. This increase image quality.

10. Claims 7, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt (US 6,278,481) in view of Zhou et al. (US 5,909,026) further in view of Kempainen (CMOS Image Sensors: ECLIPSING CCDs in Visual Information?, www.ednmag.com, October 9, 1997).

Regarding claims 7 and 26, Schmidt and Zhou et al. fail to specifically disclose wherein the CMOS imager comprises a passive pixel array. However, Kempainen discloses CMOS pixel-array construction uses active or passive pixels (page 102, third column). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify

the device in Schmidt by the teaching of Zhou et al. in order to achieve high "quantum efficiency" (page 102, third column).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hirt et al. (US 5,883,830) disclose CMOS imaging device with integrated flash memory image correction circuit.

Zhou et al. (US 6,057,539) disclose integrated sensor with frame memory and programmable resolution for light adaptive imaging.

Kimura (US 6,172,351) discloses photoelectric integrated circuit device.

Chen et al. (US 6,248,991) discloses CMOS area array sensor.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Luong Nguyen** whose telephone number is **(703) 308-9297.** If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Wendy Garber**, can be reach on **(703) 305-4929.**

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872 - 9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

LN LN
9/8/2002

WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600